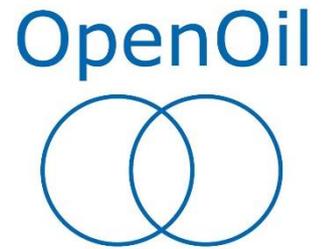


# Aramco's shareholder dilemma: "most profitable" but not profit maximising

## Narrative Report



## Introduction

This is the second paper in a series dealing with the partial flotation of Saudi Aramco<sup>1</sup>. It deals with the future of the relationship between the company and the Kingdom of Saudi Arabia (KSA), which will retain a 98.5% stake, and explains why international, and presumably profit-maximising shareholders have shied away from the Initial Public Offer (IPO).

It uses a discounted cash flow (DCF) model and Aramco's own assumptions in its IPO Prospectus<sup>2</sup>, to build a simulation of Aramco's revenue and free cash flows, using standard Net Present Value (NPV) methodology. It also uses an Article IV report on the Saudi economy published by the International Monetary Fund (IMF) in September 2019 to examine the ongoing relationship between the oil rents generated by Aramco, and KSA public finances.<sup>3</sup> A first paper explored a range of values for potential valuation, quantifying the potential effect of rapid energy transition and the impact of higher perceived "above ground" risk.<sup>4</sup>

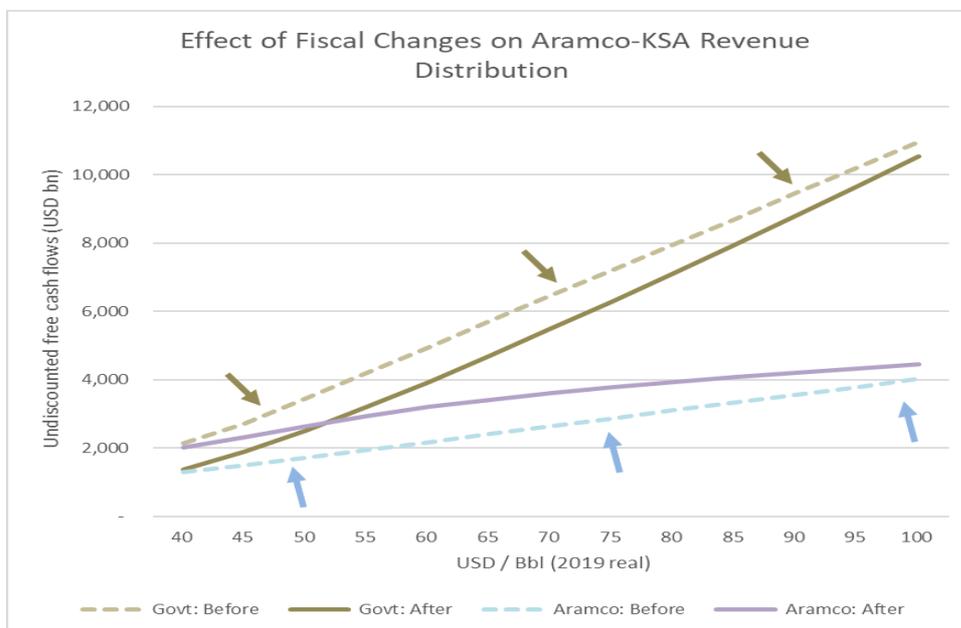


Figure 1: Fiscal Changes ahead of Aramco IPO

## Executive Summary

The Saudi government based its valuation guidance on being the most profitable company in the world. And yet it has never been run as a profit maximizing company, and won't be now.

Several changes in the fiscal regime were made in the run up to the IPO to make the subscription more attractive to investors: the base royalty rate was cut, as were corporate income tax rates. The changes mean Aramco could keep more of the free cash flows it generates – at low prices.

But the new regime is also more progressive than before. The Saudi state will still capture most of the rent in a boom market, limiting the upside for investors.

A different problem sets in at lower prices: pressure on Saudi public finances. The IMF's latest survey predicts another \$300 billion of fiscal deficit over the next five years, using a middling oil price forecast. If prices dropped lower, currency reserves could collapse within two years, and/or public debt rise so quickly there would be further pressure on interest and exchange rates. It is hard to believe the Saudi government would not then extract value from Aramco to avoid wider political and social unrest – and it retains plenty of means to do so.

<sup>1</sup> The first deals with valuation estimates and discount rates

<https://openoil.net/portfolio/aramco-ipo-what-price-energy-transition/>

<sup>2</sup> <https://www.saudiaramco.com/-/media/images/investors/saudi-aramco-prospectus-en.pdf>

<sup>3</sup> <https://www.imf.org/en/Publications/CR/Issues/2019/09/09/Saudi-Arabia-2019-Article-IV-Consultation-Press-Release-and-Staff-Report-48659>

<sup>4</sup> <https://openoil.net/portfolio/aramco-ipo-what-price-energy-transition/>

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International business media have cited sovereign risk and concerns over governance as being reasons for the lack of investor interest. The model maps some of these elements more precisely, and quantifies the relationship between various elements in Saudi Arabia's political economy and Aramco. Leading conclusions are:

- Aramco enjoys a considerable edge in terms of durability and profitability compared to other oil companies because of its low cost base. This seems to have formed the basis of KSA guidance on price, aiming for a high valuation.

However:

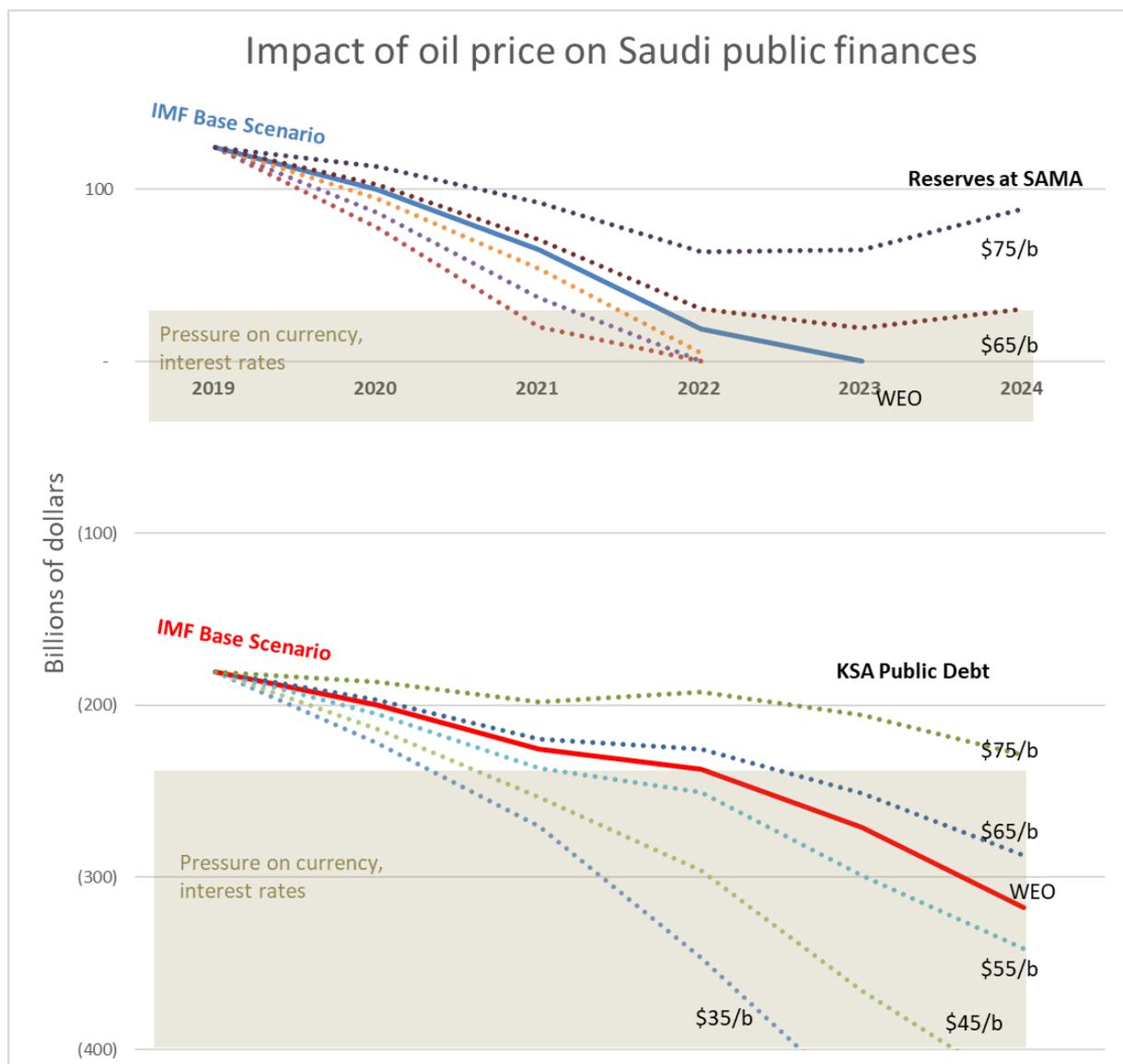


Figure 2: The effect of oil price on Saudi public finances 2019-24

- Fiscal regime changes introduced in the months before the IPO increase Aramco's share of revenues by reducing the base rate for royalties from 20% to 15%, and cutting also the corporate income tax rate to 50% in the upstream. But the new regime is more fiscally progressive than the old one and the difference thins out as prices rise. So investor upside is capped.

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- But investors would face a different pressure at low prices: Saudi public finances. Since oil dropped from a long period of high prices 2010-14 the government's foreign reserves have run down and interest rates have slowly crept up, creating considerable economic tension. The base scenario in the latest IMF report predicts Saudi Arabia will continue to run fiscal deficits totaling over \$300 billion in the next five years. But if prices were lower, the fiscal gap could widen still further. That would place the government in the position of choosing between maintaining free cash flow within Aramco, which it will still control, and finding ways to extract it to try and relieve pressure on exchange and interest rates, both of which are politically sensitive.
- An easy mechanism exists in the form of the Equalisation process – the mechanism by which the Saudi government is supposed to compensate Aramco for loss of revenues on the third of its production which is sold on the domestic market at sub-market prices. The government could simply withhold payment of funds which are likely to be in the tens of billions of dollars a year over the coming period. This would effectively short Aramco's outside investors.
- The government needs an oil price of \$81-\$82 to avoid further public debt.
- The government has declared a \$75 billion dividend for Aramco's first year as a partly privatized company. Sustaining a pro rata dividend of that kind for the 1.5% privately held stake would cost a billion dollars a year in total. But it would be unlikely to be sustainable on any kind of larger scale if oil prices stay low in the coming few years.

### Assumptions and Methodology

This analysis is built upon a DCF model produced according to the FAST financial standard, which is in wide use in the international financial services sector.<sup>5</sup>

#### Groping in the Dark

Aramco's economics continue to be hard to grasp on the basis of published information. Despite its 638-page IPO Prospectus, and documents relating to a bond issue earlier in 2019, the market continues to harbor doubts about its reserves and cost structures, in the upstream as well as the downstream. Aramco has announced ambitious plans to be a global-level vertically integrated company, and has made some acquisitions and planned others to achieve that goal. Nevertheless, the IPO lacks projections from Aramco around future profit levels.

Because the model has been designed to isolate and test first the implications of climate change policy, the base scenario incorporates as many of Aramco's own assumptions as possible – for instance lifting and capex per barrel, stated reserves.

Table 1. Economic Parameter Assumptions

Main Economic Parameters	
Life of Project	Unlimited, subject to an Economic Limit Test (ELT) to cover operating expenses and sustaining capital.

<sup>5</sup> <https://www.fast-standard.org/the-fast-standard/>

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Crude Oil: Production profile	Two profiles, subject to the ELT: one "flat" on current production of XXX, the other, "growth", rising by 0.9% per year.
Reserves	261 billion barrels (the official Aramco stated figure since 1990).
Forecast price	Constant price in 2019 dollars as user variable; scenarios of \$40 to \$80 used for scenarios;
	An "Energy Transition" price sequence based on demand peaking in 2024, causing a structural decline in prices to \$15 a barrel by 2040.
Cost	A cost curve starting at \$6 per barrel all-in costs, rising gradually over cumulative production to \$20 per barrel after 80 billion barrels, then rising on a curve to \$40 per barrel at the end of the reserves.
Natural Gas: Production	Growth of 3.8% in production on current production of 9.61 MMBtU per day.
Natural Gas Price	\$1.40 / mBtU domestically, with annual price rises to KSA price of \$6.19 / MBtU by early 2020s
Downstream:	Production: rising by 2% per year from current levels
	Refining margins averaging 7%
Domestic Market Obligation	Current allocation of 33% of Aramco production (boe basis), "Equalisation" measures fully covering gap from Blended domestic prices to international spot.

Table 2. Fiscal Regime Assumptions

Main Economic Parameters	
Royalties	Sliding scale of 15% for oil under \$70 per barrel, 45% between \$70 and \$100, and 85% over \$100 per barrel.
Cost Recovery	75% ceiling of capex and opex against post-royalty revenues
Corporate Income Tax upstream	50% on taxable income
Corporate Income Tax: Mid- and Downstream	20% on taxable income

### Aramco's Reserves and Cost Base

The most critical determinant of value in the IPO after future price is Aramco's crude oil reserves and cost base. Analysts have long noted that the company's reserves, which have never been independently audited, have remained at 260 billion barrels for three decades, despite the fact that it has produced some 90 billion barrels of oil

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during that period. Also, although there is general consensus that Saudi Arabia's cost base is the lowest in the world, detailed data are hard to come by. The Aramco prospectus defines lifting costs as averaging \$2.8 boe in 2018, and capital costs and upstream capital expenditures as \$4.7 per barrel.

The model builds upstream cost structures from estimates derived from Rystad and the International Energy Agency which appeared in a 2017 analysis of the potential Aramco IPO by Oil Change International<sup>6</sup>. Under this cost curve, reproduced here, Aramco can produce about 80 billion barrels at very low cost in global terms – under \$20 a barrel in real dollar terms. The model assumes that the company produces out all its lowest cost production at any point in time, gradually moving up the cost curve<sup>7</sup>.

### Saudi public finances

Government finances are constructed from 2009 through to the end of 2018 from data in IMF Article IV reports. The latest report issued in September 2019 also provides a forecast of various indicators through to the end of 2024. The model takes the IMF scenario, which was built on an oil price forecast which declines moderately from \$65 per barrel in 2019 to \$57 per barrel in 2024.

### Fiscal Changes

The Saudi government's preparation of the IPO has involved several steps to formalize Aramco's relationship with the state and increase its attractiveness to investors. So the company's monopoly on oil production in the Kingdom was unlimited in time until a new concession introduced in December 2017 limited it to 40 years. The presumption is that Aramco will then have to renegotiate with the government.

The major fiscal changes were that the base royalty rate was cut from 20% to 15%, while corporate income tax was reduced from 85% to 50%. Figure 1 shows the impact of this: Aramco's share of revenues goes up while the government's goes down. The effect is particularly striking in a low-price environment. At \$60 per barrel, the government takes only 55% of the profits (or what the IMF calls the Average Effective Tax Rate) under the new regime, compared to 70% at that price point in the old one. Below 50% Aramco even takes more than 50% of profits under the new regime, although of course since the government owns Aramco it will continue in effect to receive all the profit bar dividends on the 1.5% offered on the Riyadh Exchange.

The much higher rates of royalties at higher oil prices ensure that the state continues to capture directly most of the economic rents of a bull market.

### Aramco and the KSA Fiscal Deficit

The IPO comes at a delicate time in Saudi Arabia's management of public finances. During the boom years of continuous high oil prices, the government built up huge cash piles and a foreign exchange reserve. But once prices dropped in the middle of

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<sup>6</sup> <http://priceofoil.org/content/uploads/2017/08/Overheating-Expectations.pdf> p9

<sup>7</sup> In practise, Aramco is likely to have a spread of cost structures in play at any one time.

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2014, the government, impelled by political considerations, maintained a high level of public spending, and started to run up large fiscal deficits. Although KSA's overall level of sovereign debt remains relatively modest by international standards, the IMF predicts deficits of a further \$300 billion in the next five years, and it is not clear what the appetite of international lenders will be to increase lending. That leaves the government likely relying on the domestic market – and the revenues generated from Aramco's operations. Despite the company's efforts to diversify, to position itself as a major integrated oil company, these revenues will for the foreseeable future be overwhelmingly generated in the upstream – crude oil, liquids and gas production.

### Estimate of Current Aramco-KSA Revenue Flows

Because neither Aramco or the KSA have followed normative governance standards, no reliable data exist in the public domain to assess for recent years exactly how much money the government has received from Aramco, and how much Aramco has retained. The IPO Prospectus contains some figures for the past two years, but because of the volatility of the oil industry a longer-term view backwards would be needed to have confidence in understanding how the financial relationship between the two entities has worked in the past.

The approach in this model is to extract data from Article IV reports published by the IMF since 2011. These give estimates for Saudi government expenditure and revenues since 2009, and forward-looking estimates to 2024. The government's income from upstream oil revenues are isolated as one element in revenues, expressed sometimes as monetary value and sometimes as a percentage of Gross Domestic Product (GDP). Since GDP estimates for all years are also available, the GDP percentage figures for oil revenues can be converted into values both in Saudi riyals and the US dollar. The results then yield at least an approximate idea of revenue totals over the years. Combined with the financial model of Aramco's operations, we can then define, at least illustratively, the materiality of the different revenue streams between the two entities. This has not been significant in the past because of Aramco's status as a national champion state-owned company. But it is standard procedure for how to assess commercial relations between a state and a natural resource company assuming they have an arms length relationship – the paradigm both parties are seeking to promote by the IPO itself, and as a precursor to it.

Since the previous fiscal regime had higher royalty and CIT rates, the different revenue streams KSA received were dominated by these flows from company to government. The new fiscal regime, on the other hand, because it offers a higher share of profits to Aramco's potential private sector investors, so that under price scenarios close to international markets today, the balance is roughly half and half: with oil in the \$55 to \$65 per barrel range, the government will receive about half its oil revenues as a government taxing Aramco, and the other half as the 98.5% owner of Aramco controlling its dividend policy. Within the tax regime three fiscal mechanisms will be significant: royalties, corporate income tax in the upstream, and the Equalisation mechanism by which KSA is due to compensate Aramco for subsidised pricing on the third of its production which remains within Saudi Arabia. The values of all of them depend, as ever, on international markets.

But how significant Equalisation is as an element also depends, crucially, on the pace of domestic reform of the energy sector, and the government's solvency and

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own view of how to handle continued fiscal deficits. This is a clear specific factor of uncertainty for an arms length investor.

The model achieves an estimate of revenues to KSA from oil production across the range of fiscal tools which matches IMF macroeconomic estimates reasonably closely<sup>8</sup>. For instance, the IMF's estimate for upstream revenues accruing to the government comes in at around \$150 billion in 2019, compared to the \$158 billion estimate generated by the model under the WEO price scenario. Further refining of the model remains to be done. Nonetheless, the approach provides a basis to consider the relationship between future Aramco performance and Saudi public finances.

### Future Fiscal Deficits

The IMF's September 2019 report predicts fiscal deficits from 2019 through to 2024. These are expressed as percentages of GDP. Since the report also estimates GDP growth over the same period, the fiscal deficit estimates expressed in percentages of GDP can be normalised into real dollar amounts, as in Figure 3.

	2019	2020	2021	2022	2023	2024
<b>GDP (\$ bn)</b>	786	810	829	849	870	892
<b>Deficit (%)</b>	-6.50%	-5.00%	-7.30%	-6.80%	-6.40%	-5.70%
<b>Deficit (\$ bn)</b>	51	40	61	58	56	51

Figure 3: KSA Fiscal Deficits 2019-24 (IMF)

The cumulative total then is \$316 billion in real 2019 terms. At the same time the IMF report also projects continued revenues to KSA from oil exports by Aramco as \$150 billion per year in 2019, declining to about \$140 billion per year in 2024, using the World Economic Outlook forecast for prices<sup>9</sup>. In other words, the IMF predicts KSA will sustain fiscal deficits up until 2024 of about \$300 billion – assuming that it also earns about a trillion dollars in oil revenues from Aramco in the same period.

The question then remains: what will the impact of continued deficits be on Saudi public finances under these price estimates, how much will they be affected if oil prices are lower or higher – and what impact would this have on management of Aramco and future dividend policy.

The model adopts the simplifying assumption that any change in revenues caused by price fluctuation, either up or down, will be equally absorbed by two other tools within KSA monetary scope: sovereign debt, and foreign exchange reserves held at the country's central bank. This matches reasonably closely (to within a margin of error of 15%) IMF projections for the evolution of these two tools over the coming

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<sup>8</sup> Uncertainties over fiscal regime interpretation remain. For instance, it is unclear if the Equalisation mechanism is designed simply to cover the difference between sales revenues in KSA under subsidies compared to an evaluation of international markets, or if it also factors in several ripple effects through the production chain. For instance, higher sales figures should then trigger higher royalty and CIT payments to the government, which could be subtracted from the original sum to arrive a net result which was lower than the market gap.

<sup>9</sup> Itself produced by the IMF:

<https://www.imf.org/en/Publications/WEO/Issues/2019/07/18/WEOupdateJuly2019>

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period in its base assumption, though clearly the reality of debt management may be considerably more complex.

### KSA Public Debt Total

The IMF estimates KSA's public debt at 23% of GDP in 2019, or about \$181 billion. Under the base IMF scenario, this will then deteriorate to 35.6% of 2024 GDP, which will then be about \$318 billion (2019 real). So base scenario envisages extra borrowing of \$137 billion to sustain fiscal deficits.

Naturally, the higher the oil price the more scope there is for public debt to come down below the \$318 billion estimate derived from the IMF. At \$70 per barrel, for example, debt would rise to \$242 billion by 2024. Equally, low prices could aggravate the debt situation. A crash to \$40 per barrel constant over this period would result in public debt reaching \$486 billion, which could represent up to 60% of what would then also be a shrunken GDP.

Although many countries have maintained higher public debt, rising debt levels in the past several years have led to interest rate rises inside Saudi Arabia which have had a noticeable impact on the political economy of the country, such as in asset values and house prices. The IMF's base scenario assumes that debt rises by over 50% expressed as a proportion of GDP, and the model shows that increase could rise sharply higher in the case of oil prices dropping to \$50 or below.

### Foreign Exchange Reserves

The IMF prediction for foreign exchange deposits held by KSA at Saudi Arabia's Central Bank, the Saudi Arabian Monetary Agency (SAMA), is stark. Deposits, which for 2019 have been estimated at 16% of GDP, or about \$124 billion, will disappear by 2023. Under higher oil prices, this could be lessened and even at the margin reversed – an oil price of \$80 over the period, for example, would marginally increase deposits to just over \$150 billion. But prices do not have to drop much from current international market levels to wipe out KSA reserves even sooner. For instance, at any constant price below \$53 deposits would be set to run out by the end of calendar year 2021 – within 24 months of the Aramco IPO closure.

### The Equalisation Mechanism

KSA continues to struggle with energy sector reforms, to bring domestic prices for oil, gas and power up towards international market levels. Such energy subsidies are a common element of political economy, and attempts to reform them have frequently brought high political friction around the world. Aramco currently allocates about a third of its production to use inside KSA. In order to prepare the company for the IPO, the government then introduced an Equalisation mechanism, whereby it would pay back the difference between international and local markets to Aramco. The Prospectus contained accounts which valued that sum as about \$40 billion in each of 2017 and 2018.

What the model shows is that the government would face a choice in the 2019-24 period, in the event oil prices held roughly in line with 2019. The value they can save through complete price liberalization would be in the \$250 to \$300 billion range –

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almost equivalent to the extra fiscal deficits the IMF predicts it will take on. That figure can be decreased by fast and deep pricing reform – but that then comes at a high cost, given the high political sensitivity of the issue.

### Historic Management of Aramco by KSA

Finally, the history of Aramco as a company is as a national champion for KSA policy, as much as it is a driver of commercial value. A key part of KSA's geo-political strategy over generations has been its role as swing supplier in international oil markets. At times that has led to supply policy which have dramatically triggered price rises, most notably during the two Oil Shocks of the 1970s. At other times, KSA's long-standing alliance with the United States, and other factors such as competition with other state producers such as Iran or Russia, have led it to use swing supply to reduce price. In 1985-6, for example, Aramco, instructed by the Saudi government, tripled production within months, causing global prices to collapse to \$10 per barrel. Such decisions can also have commercial ramifications: some observers believe that Aramco has at times increased production to drop prices to sharpen its competitive edge against, for example, higher cost production such as US shale and so preserve long-term market share.

But there is no question that Aramco has been managed as a policy tool. The terms of the IPO – notably the small percentage of shares offered, and the fact that sovereign risk remains unaddressed by the fact the IPO is happening on the Saudi stock market, ensure that will continue to be the case. This represents major continued unpredictability for potential investors, above and beyond that caused by normal volatility of commodity markets.

### About Open Oil

OpenOil is a Berlin-based consultancy which provides financial analysis of natural resource economics for public policy. It has advised 11 governments in Africa and Asia, and has the largest published collection of financial models of extractive industries in the world.